

## Claims

1. A fading pitch detection apparatus comprising:

a plurality of demodulators, connected to a shared  
5 reception system, each for demodulating a reception signal  
through each multipath;

a synthesizer for synthesizing signals outputted from the  
plurality of demodulators with a phase difference in each  
multipath being maintained; and

10 a fading pitch detector for detecting a fading pitch based  
upon an output signal from the synthesizer.

2. The fading pitch detection apparatus of claim 1, wherein  
the fading pitch detection apparatus is designed for a CDMA  
15 system, and

wherein the plurality of demodulators is a plurality of  
despreading devices, connected to the shared reception system,  
for performing despreading for each multipath.

20 3. The fading pitch detection apparatus of claim 1, wherein  
the fading pitch detector includes,

an auto-correlation detector for calculating an auto-  
correlated value of a synthesized output signal from the  
synthesizer; and

25 a fading pitch estimation device for calculating the

fading pitch based upon a comparison result between the auto-correlated value and a predetermined threshold value.

4. The fading pitch detection apparatus of claim 3, wherein  
5 the auto-correlated value is based upon a time difference of the synthesized output signal; and

wherein the fading pitch estimation device includes,  
a comparator for obtaining a minimum value of the time  
difference with which the auto-correlated value is less than  
10 the threshold value, and

a calculator for calculating the fading pitch based upon the minimum value of the time difference.

5. The fading pitch detection apparatus of claim 4, wherein  
15 the calculator performs a liner operation.

6. The fading pitch detection apparatus of claim 3, further comprising a transforming device for transforming the synthesized output signal from the synthesizer to electric  
20 power,

wherein an output signal from the transforming device is inputted to the auto-correlation detector to obtain the fading pitch.

- 25 7. A fading pitch detection apparatus, comprising:

a transforming device for transforming an input signal including a fading-based variation to electric power;

an auto-correlation detector for calculating an auto-correlated value of an output signal from the transforming  
5 device; and

a fading pitch estimation device for calculating a facing pitch based upon a comparison result between the auto-correlated value and a predetermined threshold value.

10 8. The fading pitch detection apparatus of claim 7, wherein the auto-correlated value is based upon a time difference of the output signal from the transforming device, and

wherein the fading pitch estimation device includes,

a comparator for obtaining a minimum value of the time  
15 difference with which the auto-correlated value is less than the threshold value, and

a calculator for calculating the fading pitch based upon the minimum value of the time difference.

20 9. A mobile information terminal, comprising the fading pitch detection apparatus of claim 1.

10. A mobile information terminal, comprising the fading pitch detection apparatus of claim 7.

11. A method for detecting a fading pitch, comprising:  
demodulating a reception signal through each multipath  
by a shared reception system;  
synthesizing demodulated signals for each multipath with  
5 a phase difference in each multipath being maintained; and  
detecting a fading pitch based upon a synthesized output  
signal.
12. A method for detecting a fading pitch, comprising:  
10 transforming an input signal including a fading-based  
variation to electric power;  
calculating an auto-correlated value of an electric power  
output signal;  
comparing the auto-correlated value with a predetermined  
15 threshold value; and  
calculating a fading pitch based upon a comparison  
result.